

REMARKS

Claims 9, 11 and 13-17 are rejected, under 35 U.S.C. § 103, as being unpatentable over Podbielniak '796 (U.S. 2,281,796) in view of Vaughan '015 (U.S. 2,819,015) also in view of Kanel et al. '720 (U.S. 6,106,720) and DeFilippi et al. '415 (4,349,415). The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

Claim 14 is rejected, under 35 U.S.C. § 103, as being unpatentable over the combination of Podbielniak '796, Vaughan '015, Kanel et al. '720 and DeFilippi et al. '415 and further in view of Holl '529 (U.S. 6,572,529). The Applicant acknowledges and respectfully traverses the raised obviousness rejection in view of the above amendments and the following remarks.

Podbielniak '796 was cited by the Examiner as relevant state of the art and forms the basis for this rejection. However, Podbielniak '796 does not disclose a method or a device for extracting impurities or other constituents whatsoever from liquids or solid dispersions as claimed in the instant application.

Podbielniak '796 describes a reactor, in which vapors from a distilling kettle or other device to be fractionated are contacted in counter-current to liquids, from which the vapors to be fractionated come from. As can be read from the description on page 2, column 1, line 55 to column 2, line 56, the vapors to be fractionated enter a vapor and liquid collection device through the pipe 16. The vapors then enter the rotor 22 through a plurality of openings 29, wherein annular compartments are formed within the rotor 22. The vapors are supplied at such pressure that they travel through openings formed with reference numerals 26a and 26b in Fig. 2 of Podbielniak '796 (page 2,

column 1, lines 70-75). On their way through the rotor, the vapors are contacted with reflux liquid or other liquid that is supplied to the rotor from the opposite side. The reflux liquid is described as serving for cooling purposes and is supplied to the pipe 21 and enters the rotor through the conduit sections 19 and 41 (page 2, column 2, lines 7 to 10). As can be taken from the cited sections of the description, these pipe sections are the same as those, through which the vapors or remainder thereof leave the apparatus. Since the liquid entering the apparatus is defined as reflux liquid or cooling liquid, it becomes immediately clear that the process described by Podbielniak '796 can by no means be an extraction process. Reflux liquid is the liquid from which the vapors derive and when vapors are contacted with their reflux liquid, the resulting exchange-processes of matter forcedly result in the same compositions of the vapors and the liquid respectively. If, as it is also contemplated in Podbielniak '796, the liquid is not reflux liquid but cooling liquid, it is again evident that no extraction is envisaged but rather condensation of the vapors.

The Applicant respectfully asserts that Podbielniak '796 does not disclose a method and device for extracting impurities from liquids using compressed solvents in counter-current contact. Although Podbielniak '796 discusses alternative uses for the teachings of the patent on page 3, column 2, lines 45 to 76. However the processes described in this passage are all absorption processes (the opposite of extraction processes), wherein constituents are *removed from gases*. The gases do not take up constituents from the liquid, but rather constituents are introduced *into the liquids from the gases*.

It is further suggested by the Examiner that the method and the device disclosed by Podbielniak '796 uses compressed solvents in counter-current contact and contact with carbon dioxide and cites page 3, column 1, lines 1 to 11 and 57 to 67 to support this suggestion. The Applicant respectfully disagrees with the Examiners assertion. The Applicant avers that Podbielniak '796 fails to teach the subject matter as claimed in the application. With respect to the immediately preceding citation, the Applicant insists that the passage from line 57 to 67 of page 3, column 1 does not refer to a solvent or carbon dioxide at all. Furthermore with respect to the passage on page 3, column 1, lines 1 to 11, this citation have to be taken in conjunction with the last paragraph of page 2. From these passages it becomes clear, that the carbon dioxide taught by Podbielniak '796 is used as an inert gas, that is supplied to the interior of the casing 10 to maintain it under a pressure that is approximately the same as that prevailing within the interior of the rotor in order to prevent or avoid the necessity of constructing the rotor to withstand undue pressures.

The Applicant avers that, in contradiction to the claims of the application, the carbon dioxide as utilized by Podbielniak '796 does not take part in any thermodynamical process inside the rotor, the rotor being equivalent to the reactor in the instant application. It is hence also of no importance, whether the carbon dioxide is withdrawn from the apparatus of Podbielniak '796 by separate lines, since these lines are not connected to the reactor itself and cannot be compared to the discharge openings of the reactor as claimed in the instant application.

The Applicant asserts that, with these basic differences of the method and the apparatus as claimed, it cannot be reasonably argued that a person skilled in the art

would take the Podbielniak '796 patent as pertinent prior art or as a basis for developing an extraction method or a suitable device for such a method.

In further distinction from the claims of the application, the Applicant notes that according to page 2, column 2, lines 37 to 56, the liquid traveling through the rotor in the apparatus of Podbielniak '796 in counter-current to vapors is not withdrawn from the flow of vapors, as would be necessary in an extraction process. This reference clarifies that the liquid flows out through the "... pipe 16 by which it may be returned to the kettle or receptacle, from which vapors are supplied to the system."

With regard to the cited combination of references including the teachings of Kanel et al. '720 which teaches solvent extraction, utilizing liquid or supercritical carbo dioxide. If supercritical carbo dioxide was used according to the method of Kanel et al. '720 in the apparatus of Podbielniak '796, the Applicant asserts that the apparatus of Podbielniak '796 would fail. In this regard, the claims as originally filed and as currently amended do not claim extraction using liquid or supercritical carbon dioxide like the teachings of Kanel et al. '720, but instead the Applicant claims an improved method and an appropriate device for exposing liquids to be treated in an optimized way to contact the liquid or supercritical carbon dioxide. In the context of the use of supercritical or liquid carbon dioxide as an extraction agent (while the carbon dioxide according to the teaching of Podbielniak '796 is only used as an inert gas), it is important to note on page 2, column 2, lines 57 to 65, that liquid seals are described, that seal the rotor (i.e. the reactor). It is, of course, evident that when using supercritical carbon dioxide, whose pressure is at least 31 bar, such water seals could never

withstand such high pressures and thus the utility of the Podbielniak '796 apparatus would fail.

The Applicant acknowledges that the additional references of Vaughan '015, DeFilippi et al. '415 and Holl '529 may *arguably* relate to the features indicated by the Examiner in the official action. Nevertheless, the Applicant respectfully submits that the combination of the base references with this additional art still fails to in any way teach, suggest or disclose the above distinguishing features of the presently claimed invention. As such, all of the raised rejections should be withdrawn at this time in view of the above amendments and remarks.

Contrary to the claims of the application it is noted that none of the cited references include a plurality of rollers that have helical, conical, convex or concave profiles and which are aligned adjacent to the interior of wall of the reactor so as to simultaneously adjust the thickness of the thin film and promote axial movement of the thin film toward a discharge orifice.

In order to emphasize noted distinctions between the presently claimed invention and the applied art, the claims of this application now recite the steps of "promoting axial movement of the thin film by rotating the at least one of rods, scrapers, wipers and rollers, which have a helical profile, such that the thin film flows toward a discharge opening", while claim 19 recites the features of "a plurality of radial arms rotationally support a plurality of roller (12) such that the rollers (12) are axially aligned adjacent the inner shell (13) of the reactor (1), the rollers (12) are spaced from the inner shell (13) of the reactor (1) by a preset distance, which defines a thickness of the liquid or dispersion film, the rollers (12) having one of a helical, a conical, a concave and a

convex profile to promote movement of the liquid or dispersion film to a discharge opening". Such features are believed to clearly and patentably distinguish the presently claimed invention from all of the art of record, including the applied art.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejection(s) should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejections or applicability of the Podbielniak '796, Vaughan '015, Kanel et al. '720, DeFilippi et al. '415 and Holl '529 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

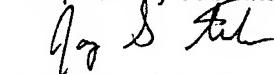
In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

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The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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